

**CLAIMS**

1. A method to guarantee for a service a bandwidth across an access network with a quality of service, said access network comprising an edge node, a plurality of subscribers being coupled to said access network,  
5 said method comprising the step of provisioning a plurality of virtual connections capable of meeting bandwidth and quality of service requirements, whereof each virtual connection is established between one of said plurality of subscribers and said edge node, **characterized in that** said method further comprises the steps of:
  - 10 - upon request of said service by a subscriber out of said plurality of subscribers, identifying a virtual connection out of said plurality of virtual connections capable of guaranteeing said quality of service between said subscriber and said edge node,
  - checking whether said virtual connection can convey said bandwidth,
  - 15 - according to the outcome of said checking step, granting or denying said service to said subscriber.
2. A method according to claim 1, **characterized in that** said method further comprises the steps of:
  - if said virtual connection cannot convey said bandwidth, check  
20 additionally whether said access network can accommodate said bandwidth between said subscriber and said edge node along said virtual connection,
  - according to the outcome of said additional checking step:
    - adapting the capacity of said virtual connection for it to convey said bandwidth and granting said service to said subscriber,
    - else denying said service to said subscriber.
3. A method according to claim 1, **characterized in that** said method comprises the preliminary steps of:
  - provisioning a path across said access network, the bandwidth of which  
30 being determined from a traffic load expected from said plurality of subscribers,

- aggregating said plurality of virtual connections over said path,
- disabling any connection admission control means in said access network that may prevent from aggregating said plurality of virtual connections over said path,

5     **and in that** said method further comprises the steps of:

- if said virtual connection can convey said bandwidth, checking additionally whether said path can convey said bandwidth,
- according to the outcome of said additional checking step, granting or denying said service to said subscriber.

10           4. A method according to claim 1, **characterized in that** said method comprises the preliminary step of provisioning a path across said access network, the bandwidth of which being determined from a traffic load expected from said plurality of subscribers, **and in that** said method further comprises the steps of:

- if said virtual connection can convey said bandwidth, checking additionally whether said path can convey said bandwidth,
- according to the outcome of said additional checking step,
  - connecting said virtual connection to said path and granting said service to said subscriber,
  - else denying said service to said subscriber.

15           5. A method according to claim 3 or 4, **characterized in that** the bandwidth of said path is determined according to a statistical traffic law, given a number of virtual connections multiplexed over said path, a traffic load per user and a service deny probability.

20           6. A method according to claim 3 or 4, **characterized in that** the number of virtual connections multiplexed over said path is determined according to a statistical traffic law, given a bandwidth of said path, a traffic load per user and a service deny probability.

25           7. An access network comprising an edge node, a plurality of subscribers being coupled to said access network, said access network comprising administration means adapted to provision a plurality of virtual

connections capable of meeting bandwidth and quality of service requirements, whereof each virtual connection is established between one of said plurality of subscribers and said edge node, **characterized in that** said access network further comprises access resource control means adapted to:

- upon request of a bandwidth across said access network with a quality of service for a subscriber out of said plurality of subscribers requesting a service, identify a virtual connection out of said plurality of virtual connections capable of guaranteeing said quality of service between said subscriber and said edge node,
- check whether said virtual connection can convey said bandwidth,
- according to the outcome of said checking step, grant or deny said bandwidth to said service.

8. An access network according to claim 7, **characterized in** that said access resource control means are coupled to said administration means, **in that** said administration means are further adapted to adapt the capacity of said virtual connection, **and in that** said access resource control means are further adapted to:

- if said virtual connection cannot convey said bandwidth, check additionally whether said access network can accommodate said bandwidth between said subscriber and said edge node,
- according to the outcome of said additional checking step:
  - trigger said administration means to adapt the capacity of said virtual connection for it to convey said bandwidth and grant said bandwidth to said service,
  - else deny said bandwidth to said service.

9. An access network according to claim 7, **characterized in** that said administration means are further adapted to

- provision a path across said access network, the bandwidth of which being determined from a traffic load expected from said plurality of subscribers,

- aggregate said plurality of virtual connections over said path,
- disable any connection admission control means in said access network that may prevent from aggregating said plurality of virtual connections over said path,

5     **and in that** said access resource control means are further adapted to:

- if said virtual connection can convey said bandwidth, check additionally whether said path can convey said bandwidth,
- according to the outcome of said additional checking step, grant or deny said bandwidth to said service.

10           10. An access network according to claim 7, **characterized in that** said access resource control means are coupled to said administration means, **in that** said administration means are further adapted to:

- provision a path across said access network, the bandwidth of which being determined from a traffic load expected from said plurality of

15           subscribers,

- connect said virtual connections to said path,

**and in that** said access resource control means are further adapted to:

- if said virtual connection can convey said bandwidth, checking additionally whether said path can convey said bandwidth,

20           - according to the outcome of said additional checking step,

- trigger said administration means for it to connect said virtual connection to said path and grant said bandwidth to said service,
- else deny said bandwidth to said service.